

In re Patent Application of:
CAIN ET AL.
Serial No. 10/658,357
Filing Date: **SEPTEMBER 9, 2003**

In the Claims:

1. (Original) A mobile ad hoc network (MANET) comprising:

- a plurality of mobile nodes each comprising a wireless communications device and a controller connected thereto;
- said controller operating in accordance with a multi-layer protocol hierarchy for,
 - at an upper protocol layer, establishing a quality-of-service (QoS) threshold;
 - at at least one intermediate protocol layer below the upper protocol layer, determining whether a QoS metric for at least one selected route from at least one source mobile node falls below the QoS threshold; and
 - at a lower protocol layer below the at least one intermediate protocol layer, cooperating with said wireless communications device to
 - determine the QoS metric for the at least one selected route,
 - receive data from the at least one source mobile node via the at least one selected route, and
 - adjust signal reception gain based upon a determination that the QoS metric has fallen below the QoS threshold.

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2. (Original) The MANET of Claim 1 wherein said wireless communications device provides an adjustable signal reception pattern; and wherein, at the lower protocol layer, said controller also cooperates with said wireless communications device to change the signal reception pattern based upon a determination that the QoS metric has fallen below the QoS threshold.

3. (Original) The MANET of Claim 1 wherein the upper protocol layer comprises an application layer.

4. (Original) The MANET of Claim 1 wherein the at least one intermediate protocol layer comprises at least one of a session layer, a transport layer, a network layer, and a radio transport layer.

5. (Original) The MANET of Claim 1 wherein the lower protocol layer comprises a physical layer.

6. (Original) The MANET of Claim 1 wherein the QoS threshold is based upon at least one of available bandwidth, error rate, end-to-end delay, end-to-end delay variation, hop count, expected path durability, and priority.

7. (Original) A mobile ad hoc network (MANET) comprising:

a plurality of mobile nodes each comprising a wireless

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communications device providing an adjustable signal reception pattern and a controller connected thereto;

said controller operating in accordance with a multi-layer protocol hierarchy for,

at an upper protocol layer, establishing a quality-of-service (QoS) threshold;

at at least one intermediate protocol layer below the upper protocol layer, determining whether a QoS metric for at least one selected route from at least one source mobile node falls below the QoS threshold; and

at a lower protocol layer below the at least one intermediate protocol layer, cooperating with said wireless communications device to

determine the QoS metric for the at least one selected route,

receive data from the at least one source mobile node via the at least one selected route, and

adjust the signal reception pattern based upon a determination that the QoS metric has fallen below the QoS threshold.

8. (Original) The MANET of Claim 7 wherein the upper protocol layer comprises an application layer.

9. (Original) The MANET of Claim 7 wherein the at least

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one intermediate protocol layer comprises at least one of a session layer, a transport layer, a network layer, and a radio transport layer.

10. (Original) The MANET of Claim 7 wherein the lower protocol layer comprises a physical layer.

11. (Original) The MANET of Claim 7 wherein the QoS threshold is based upon at least one of available bandwidth, error rate, end-to-end delay, end-to-end delay variation, hop count, expected path durability, and priority.

12. (Original) A method for operating a mobile node in a mobile ad hoc network (MANET), comprising a plurality of mobile nodes, in accordance with a multi-layer protocol hierarchy, the mobile node comprising a wireless communications device, the method comprising:

at an upper protocol layer, establishing a quality-of-service (QoS) threshold;

at at least one intermediate protocol layer below the upper protocol layer, determining whether a QoS metric for at least one selected route from at least one source mobile node falls below the QoS threshold;
and

at a lower protocol layer below the at least one intermediate protocol layer,

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using the wireless communications device to
determine the QoS metric for the at least one selected
route,

causing the wireless communications device to
receive data from the at least one source mobile node
via the at least one selected route, and

causing the wireless communications device to
adjust signal reception gain based upon a determination
that the QoS metric has fallen below the QoS threshold.

13. (Original) The method of Claim 12 wherein the
wireless communications device provides an adjustable signal
reception pattern; and further comprising, at the lower protocol
layer, causing the wireless communications device to change the
signal reception pattern based upon a determination that the QoS
metric has fallen below the QoS threshold.

14. (Original) The method of Claim 12 wherein the upper
protocol layer comprises an application layer.

15. (Original) The method of Claim 12 wherein the at
least one intermediate protocol layer comprises at least one of a
session layer, a transport layer, a network layer, and a radio
transport layer.

16. (Original) The method of Claim 12 wherein the lower
protocol layer comprises a physical layer.

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17. (Original) The method of Claim 12 wherein the QoS threshold is based upon at least one of available bandwidth, error rate, end-to-end delay, end-to-end delay variation, hop count, expected path durability, and priority.

18. (Original) A method for operating a mobile node in a mobile ad hoc network (MANET) comprising a plurality of mobile nodes in accordance with a multi-layer protocol hierarchy, the mobile node comprising a wireless communications device providing an adjustable signal reception pattern, the method comprising:

at an upper protocol layer, establishing a quality-of-service (QoS) threshold;

at at least one intermediate protocol layer below the upper protocol layer, determining whether a QoS metric for at least one selected route from at least one source mobile node falls below the QoS threshold; and

at a lower protocol layer below the at least one intermediate protocol layer,

using the wireless communications device to determine the QoS metric for the at least one selected route,

causing the wireless communications device to receive data from the at least one source mobile node via the at least one selected route, and

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causing the wireless communications device to adjust the signal reception pattern based upon a determination that the QoS metric has fallen below the QoS threshold.

19. (Original) The method of Claim 18 wherein the upper protocol layer comprises an application layer.

20. (Original) The method of Claim 18 wherein the at least one intermediate protocol layer comprises at least one of a session layer, a transport layer, a network layer, and a radio transport layer.

21. (Original) The method of Claim 18 wherein the lower protocol layer comprises a physical layer.

22. (Original) The method of Claim 18 wherein the QoS threshold is based upon at least one of available bandwidth, error rate, end-to-end delay, end-to-end delay variation, hop count, expected path durability, and priority.